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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,858	06/30/2006	Takanori Itou	040302-0569	4646

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FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
KWON, ASHLEY M	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
05/25/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/581,858	ITOU ET AL.	
	Examiner	Art Unit	
	ASHLEY KWON	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 January 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,6,11 and 12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6,11 and 12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application.
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

In response to the amendment received January 25, 2010:

a. Claims 1-3,6, 11 and 12 are pending;

b. Claim 1 has been amended;

c. Claim 4 has been canceled;

d. Claims 11 and 12 have been newly added;

e. New art rejections have been applied in light of applicant's amendments.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Kurasawa et al. (machine translation of JP 09-050810) (hereinafter "Kurasawa").

Regarding claim 1, Kurasawa discloses a positive electrode material for non-aqueous electrolyte lithium ion battery, comprising: an oxide containing lithium and nickel (see paragraph 11); and a lithium compound deposited on a surface of the oxide, the lithium compound covering nickel present on the surface of the oxide, the lithium compound comprising lithium hydroxide (see paragraph 21).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3, 6, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mao et al. (US 6,071,649) (hereinafter "Mao") in view of Huang (US 2003/0157409).

Regarding claim 1, Mao discloses a positive electrode material for non-aqueous electrolyte lithium ion battery, comprising: an oxide containing lithium and nickel; and a lithium compound deposited on a surface of the oxide, the lithium compound covering nickel present on the surface of the oxide (see col. 2, lines 47-59).

Mao fails to disclose the lithium compound comprising at least one selected from the group listed in amended claim 1. Mao does disclose a positive electrode material wherein lithium cobalt oxide covers the nickel present on the surface of the oxide.

However, Huang teaches a lithium secondary battery wherein the active material of the positive electrode element is selected from the group consisting of lithium intercalation compounds, lithium salts, lithium oxides, and combinations thereof, wherein; the lithium intercalation compound is selected from the group consisting of **$LiCoO_2$**, $LiNiO_2$, $LiMn_2O_4$; the lithium salt is selected from the group consisting of **LiF** and **Li_2SO_4**; and the lithium oxide is selected from the group consisting of Li_2O and **LiOH.** The selection of a known material, which is based upon its suitability for the intended use, is within the ambit of one of ordinary skill in the art. See *In re Leshin*, 125 USPQ 416 (CCPA 1960) (see MPEP § 2144.07). Therefore, since Huang teaches that lithium cobalt oxide, lithium fluoride, lithium sulfate, and lithium hydroxide are known equivalent positive active materials, it would have been obvious for one of ordinary skill in the art to use lithium fluoride, lithium sulfate, or lithium hydroxide to cover the nickel present on the surface of the oxide taught by Mao, instead of lithium cobalt oxide.

Regarding claim 3, Mao discloses a positive electrode material according to claim 1, wherein, the lithium compound is deposited to be sprinkled on the surface of the oxide. Mao discloses that the $LiCoO_2$ used to coat the $LiNiO_2$ was a mixture of $LiNiO_2$ and $LiCoO_2$, wherein $LiCoO_2$ comprised 2, 4, 8, 10, and 15 wt% of the solution. Therefore, when this mixture is used to coat the $LiNiO_2$, the $LiCoO_2$ is sprinkled on the $LiNiO_2$ surface since the $LiCoO_2$ covers only portions of the nickel present on the surface of the oxide, and the rest is coated with more $LiNiO_2$. As discussed above for claim 1, it would have been obvious to one of ordinary skill in the art to use lithium phosphate instead of lithium cobalt oxide.

Although Mao does not specifically recognize volumetric amounts of the lithium compound used, Mao does recognize that different weight amounts can be used to improve and thus optimize charge efficiencies (see paragraph 4, lines 45-47). Accordingly, Mao's general teaching is that the amount of the lithium compound used is a result effective variable (regardless with respect to what that amount applies to, i.e. weight or volume), and one of ordinary skill in the art would be able to optimize such amounts in order to provide improved charge efficiencies. The discovery of an optimum value of a known result effective variable, without producing any new or unexpected results, is within the ambit of a person of ordinary skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980) (see MPEP § 2144.05, II.).

Regarding claim 6, Mao in view of Huang discloses a nonaqueous electrolyte lithium ion battery (*Mao:* electrochemical cell, 10), comprising: a positive electrode active material layer comprising a positive electrode material (*Mao:* 20) according to claim 1; a negative electrode active material layer (*Mao:* 30) comprising a negative electrode active material; and an electrolyte layer *Mao:* 40) disposed between the positive and negative electrode active material layers (*Mao:* see col. 2, lines 15-45).

Regarding claim 11, Mao in view of Huang discloses a positive electrode material according to claim 1, wherein the lithium compound comprises at least one selected from the group consisting of lithium fluoride and lithium sulfate. See arguments above for claim 1.

Regarding claim 12, Mao in view of Huang discloses a positive electrode material according to claim 1, wherein the lithium compound is lithium sulfate. See arguments above for claim 1.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurasawa.

Regarding claim 2, Kurasawa fails to explicitly disclose a positive electrode material according to claim 1, wherein, when the lithium compound is deposited to cover substantially an entire surface of the oxide, thickness of a cover layer of the lithium compound ranges from 5 nm to 1 μm.

However, Kurasawa discloses that it is preferred that the average thickness calculated from the mean particle diameter of a lithium nickel multiple oxide and the addition of a coating substance shall be 0.001 microns or more, or 5 microns or less (see paragraph 16). The courts have held that where claimed ranges overlap or lie inside ranges disclosed by the prior art, a prima facie case of obviousness exists (see MPEP § 2144.05). Furthermore, the discovery of an optimum value of a known result effective variable, without producing any new or unexpected results, is within the ambit of a person of ordinary skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980) (see MPEP § 2144.05, II.). Therefore, it would have been obvious for a person of ordinary skill in the art to optimize the thickness of the lithium compound layer in order for the battery to function at high capacity (see paragraph 16).

Claim 2 is further rejected under 35 U.S.C. 103(a) as being unpatentable over Mao in view of Huang as applied to claim 1 above, and further in view of Kurasawa.

Regarding claim 2, Mao in view of Huang fail to disclose a positive electrode material according to claim 1, wherein, when the lithium compound is deposited to cover substantially an entire surface of the oxide, thickness of a cover layer of the lithium compound ranges from 5 nm to 1 μm.

However, Kurasawa discloses a positive electrode material for non-aqueous electrolyte lithium ion battery wherein lithium nickel multiple oxide is coated with a substance that is 0.001 microns or more, or 5 microns or less (see paragraph 16). The discovery of an optimum value of a known result effective variable, without producing any new or unexpected results, is within the ambit of a person of ordinary skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980) (see MPEP § 2144.05, II.). Therefore, it would have been obvious for a person of ordinary skill in the art to optimize the thickness of the lithium compound layer taught by Mao in view of Huang in order for the battery to function at high capacity (see paragraph 16).

Response to Arguments

Applicant's arguments filed 1/25/10 have been fully considered but they are not persuasive.

Applicant argues that Kurasawa's lithium compound is a composite oxide and therefore does not read on claim 1. Examiner respectfully disagrees. Claim 1 requires that the lithium compound **comprise** one of the listed compounds, which does not

preclude composites of the listed compounds. Therefore, since the coating taught by Kurasawa contains lithium hydroxide it meets the claim.

Applicant's arguments with respect to claims 1, 3 and 6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ASHLEY KWON whose telephone number is (571)270-7865. The examiner can normally be reached on Monday to Thursday 7:30 - 6 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ASHLEY KWON/
Examiner, Art Unit 1795

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795